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Homework 3

Due Th 9/15 10AM
Hand Copy

$$\textcircled{1} \quad x_{n+1} = 1 - 2x_n^2 \quad \left\{ \begin{array}{l} |x_0| < 1 \\ |x_0| \neq 0.5 \end{array} \right.$$

- What is the change in x_{10} if x_0 is changed by 10^{-3} ; What is the Lyapounov exponent
- Make an histogram with ~ 100 bins
- Fit the histogram with functions of your choice (until satisfied!)

② Read Chapter 6 of Feynman's Lectures I

- Simulate the 90 trials of 30 tosses of a coin using $\textcircled{1}$ as your random number generator:
$$\left\{ \begin{array}{l} x_n > 0 \rightarrow \text{Head} \\ x_n < 0 \rightarrow \text{Tail} \end{array} \right.$$

- Plot your version of Fig 6-2

- Compare with the prediction.

Are the fluctuations reasonable?

- Is $\textcircled{1}$ a good random number generator?